DOCUMENT RESUME

ED 163 087 TM 008 228

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TITLE	The "Test Chooser": A Different Approach to a Prediction Weighting Scheme. GRE Board Professional Report GREB No. 70-2P.
INSTITUTION	Educational Testing Service, Princeton, N.J.
PUB DATE	Nov 74
NOTE	54p.
AVAILABLE FROM	Graduate Record Examinations, Educational Testing Service, Princeton, New Jersey 08541 (free while supplies last)
EDRS PRICE	MF-$0.83 HC-$3.50 Plus Postage.
DESCRIPTORS	*Academic Achievement; Achievement Tests; Aptitude Tests; *Biographical Inventories; *College Entrance Examinations; Demography; Grade Point Average; Graduate Study; Higher Education; Predictive Ability (Testing); *Predictor Variables; *Student Attitudes; Student Characteristics; Student Motivation; *Success Factors; Weighted Scores
IDENTIFIERS	*Graduate Record Examinations

ABSTRACT

First-year graduate students were asked to respond to a biographical questionnaire which emphasized motivational variables in addition to the usual demographic variables. It was hypothesized that the students could select from a group of ability measures the one best indicator of how well they would do in graduate school. To test this hypothesis the sample was divided into parts, those who felt tests were the best indicator of success (test choosers) and those who felt that some other means of assessment was the best for them (non-test choosers). Within-group regressions were then computed and compared using path analysis techniques. The obtained empirical least squares weighting system gave support to the possibility that graduate students could identify those predictors which would yield minimum errors of prediction for them. Indications of the importance of motivational measures as predictors for "non-test choosers" were suggested. The Experimental Biographical Questionnaire for Graduate Students and statistical data for the 56 items are appended. (Author/ROF)

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Donald A. Rock

GRE Board Professional Report GREB No. 70-2P

November 1974

This report presents the findings of a research project funded by and carried out under the auspices of the Graduate Record Examinations Board.

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Abstract

First-year graduate students were asked to respond to a biographical questionnaire which emphasized motivational variables in addition to the usual demographic variables. It was hypothesized that the students could select from a group of ability measures the one best indicator of how well they would do in graduate school. To test this hypothesis the sample was divided into two parts, those who felt tests were the best indicator of success (test choosers) and those who felt that some other means of assessment was the best for them (non-test choosers). Within-group regressions were then computed and compared using path analysis techniques. The obtained empirical least squares weighting system gave support to the possibility that graduate students could identify those predictors which would yield minimum errors of prediction for them. Indications of the importance of motivational measures as predictors for "non-test choosers" were suggested.

THE "TEST CHOOSER": A DIFFERENT APPROACH TO A PREDICTION WEIGHTING SCHEME

Donald A. Rock

Background

Use of the biographical information blank (BIB) as a predictive measure has achieved a varying yet limited degree of success when used with student populations. At first glance it may seem that much of this lack of consistency is in part due to: (a) poor choice of the type of biographical items and/or criteria and (b) an over-simplification on the part of the researcher with regard to the possible complexity of the relationships among biographical variables when used in the prediction model.

The most frequently used criteria have been: (a) academic grades which are predicted with little degree of success particularly when the multiple prediction equation incorporates tests and prior academic performance; (b) several forms of nonscholastic "creative" achievement which have been found in some cases to be more highly correlated with BIB measures than intellectual or other ability measures (Anastasi, Meade, & Schneiders, 1960; Holland & Richards, 1966); (c) persistence in college (Willingham, 1965) with validation found at fairly low levels; and finally (d) vocational or curriculum choice which bears modest but seemingly consistent relationships to background information (Holland, 1962, 1963a,b; Stockin, 1964).

Other more recent research (Klein, Rock, & Evans, 1968; Rock, 1969) suggests that regardless of criteria a more effective use of many BIB items is as moderators or grouping variables rather than as simple linear additive effects in the usual multiple regression models. That is, their greatest potential appears to be as a means for subdividing the total

population into subgroups which, in turn, are characterized by differing levels of predictive accuracy. The question then arises how--or better yet, why--do these grouping variables lead to subgroups characterized by differing levels of predictability with respect to academic achievement?

One likely explanation for this phenomenon is that different predictors have different validities for different types of people. This situation calls for the matching of person with predictor. Thus the purpose of this study was (1) to identify those individuals for whom the usual predictors may not be optimum, and (2) to consider for these people the validity of non-test predictors, in particular measures of motivation.

The method used here to match person to predictor was simply to ask the individuals what method they felt was the most accurate assessment of their academic capabilities. Once gaining this information we were able to test the goodness of fit of their "personal belief" model with the empirical data by examining the empirically derived weights. This approach is somewhat related to the theoretical developments in the field of personal probability and its application to test item weighting schemes. That is, the test examinee in some sense is asked to indicate his or her confidence in the correct option (De Finetti, 1965; Shuford, Albert, & Massengill, 1966). In general, the higher the confidence level assigned by the examinee to the correct response, the larger the weight given the examinee for the correct response. In the context of this study the individual was asked via a biographical questionnaire which method he thought would best estimate his ability. If this scheme were carried to its logical conclusion, the weights in a multiple prediction system would reflect his personal assessment of

the value of various methods available for estimating his academic potential. Such a system would allow the applicant to put "his best foot forward," so to speak. The question is, how would such an ipsative weighting system affect overall predictive accuracy?

The above approach is designed to tap an individual's experiential past with respect to feedback he may have had concerning the relative success of various methods of assessing his academic achievements. It is hoped this approach will lead to a more individualized weighting system in prediction schemes. Instead of applying the usual "normative" weights that reflect minimizing the error of prediction on the average across the whole sample, the approach under investigation here is a "quasi-ipsative" approach which allows an individual to use his past experiences to select from among a set of assessment procedures the one that is "best" for him or her.

This proposed method is, however, a test of a theory toward prediction and not in itself concerned with causal relationships. It is hoped that through path analysis methods some indications of (a) what basis an individual uses for selecting a particular assessment procedure, and (b) relative impact of motivation on first year graduate achievement may also be ascertained.

Method

Biographical questionnaire information, Graduate Record Examination scores including the advanced subject matter test (GRE-A) were collected on incoming first year graduate students at three universities. At the

end of their first year, grade point average (GPA) was collected for these students. The total sample of approximately 450 cases was then randomly subdivided into two subsamples, a validation sample (VS) and a cross-validation sample (CVS).

In addition to building the usual prediction equations and thus obtaining the "normative" validity information, the two samples were further subdivided into two parts according to their responses to a biographical item. This subdivision was based on whether they thought test scores would be the one best indicator of how well they would do in graduate school ("test choosers") or whether they would consider some other ability measure as being more representative of their future academic achievement ("non-test choosers"). Within-group predictions of GPA were then obtained.

The three predictors used were GRE-A, rank in class in undergraduate school (UGR), and a biographical scale on which the respondent indicated on a continuous scale his chances of achieving an A-grade point average or better. This variable will be referred to as SPFAA, the mnemonics standing for self-prediction of further academic attainment. The GRE-A and the SPFAA were selected because they were the two best predictors in the validation sample. Rank in class was included since it is traditionally used in most prediction systems.

The relative size of the within-group regression weights associated with test scores were compared with the other weights in the system in order to see if the empirically "best" weights simulated their "personal beliefs." In short, is there any empirical evidence that the applicant

himself can minimize his own error of prediction by selecting among various assessment methods the one which is the best indicator of success for him?

Simple path analysis methods were then applied to selected variables from both the BIB and the prediction equations in an effort to identify the direct as well as indirect determinants of (1) a person's self-perception of his or her academic ability (SPFAA) and (2) success in first year graduate school as measured by GPA. Path models within the two subpopulations (test choosers and non-test choosers) were compared in order to gain further insight into possible structural differences underlying their choice of assessment procedures.

Results and Discussion

Table 1 presents the usual validity information for a multiple prediction scheme using GRE-A, chances of achieving a high GPA (SPFAA) and undergraduate rank in class (UGR) as independent variables in predicting graduate GPA.

Insert Table 1 about here

Inspection of Table 1 indicates that for the most part GRE-A and SPFAA carried almost equal weights in the prediction of graduate GPA. Having demonstrated evidence for the stability of the "normative" weights across both samples, the question of interest becomes how do they change, if at all, when the samples are further divided according to choice of assessment techniques?

Table 2 presents that information. Comparing the results found in Table 2 with those found in Table 1 lends support to the possibility that

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Insert Table 2 about here

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individuals can select the method of assessment which is "best" (best in the sense that it minimizes the error of prediction) for them. Table 2 also indicates that the students did indeed put their "best foot forward" when selecting an assessment method. That is, those choosing tests did have on the average considerably higher test scores than the remaining sample (675 vs. 624 in sample 1, and 708 vs. 637 in sample 2).

What is even more interesting from a statistical point of view is that those individuals choosing tests were a rather homogeneous group; i.e., they all had rather high test scores and thus their group variance was considerably restricted compared to the remainder of the sample. In spite of this restriction in range, the standardized partial regression weights associated with the GRE-A test scores for this group are no longer slightly less in absolute value than those weights associated with SPFAA but are approximately three times as big in both replications [samples 1 (a) and 2 (a)].

If one inspects the 0-order validity coefficients presented in Table 2, the same pattern is replicated in both samples. That is, for those individuals who select tests, the validity coefficient associated with tests is always substantially higher than those associated with the remaining predictor variables. This pattern is reversed in the group of individuals preferring other means of assessment. Another possible statistical artifact which could bring about these results would be if grouping on preferences for tests systematically spread the variance on the criterion, however, if anything, the reverse occurred. That is, there is a slight restriction

in the variance of GPA for this group. There is some restriction in range for SPFAA in sample 2 (a) compared to sample 2 (b), but the variance of SPFAA is actually larger in sample 1 (a) than in sample 1 (b).

In an effort to gain further insight into these results, path analysis procedures were introduced. Path analysis methodology has been developed in biology (Wright, 1960) and economics (Goldberger, 1964) and has only recently been applied in the social sciences (Blalock, 1969, 1971; Werts & Linn, 1970). Figures 1 and 2 present the traditional path analysis

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Insert Figures 1 and 2 about here

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pictorial presentation of a hypothetical causal network among selected variables. Figure 1 is based on the pooled data from both samples 1 and 2 for those who selected tests as the best estimators of their graduate school success, while Figure 2 is the pooling of the observations from samples 1 and 2 for those who chose other than tests. Since the consistency of the previous findings had been demonstrated by two independent replications, the two replication samples were pooled in order to use all the data in estimating the final parameters and their interrelationships.

New variables were introduced into the system in the path analysis computations so that the patterns of interrelationships among predetermining variables could be compared for these two apparently different populations (i.e., those who chose tests vs. those who did not). The path analysis diagrams in this case are simply a means for simplifying the interpretation of somewhat complex causal relations. Arrows connecting any two variables and going in one direction indicate which of the two is the predeterminer.

If the structural system is recursive, that is, no reciprocal causation, the b^*_{ij} above "one way" arrows are simply standardized partial regression coefficients and their relative size indicates the importance of the jth variable as a determiner of the ith variable. For example, in Figure 1, b^*_{y1} is slightly more than three times as large as b^*_{y4} indicating that while they are both hypothesized determiners of GPA (Y), GRE-A is three times as important as SPFAA. Using path analysis methods (Anderson & Evans, 1974; Wright, 1960) one can also partition the total effect of a hypothetical causal variable such as GRE-A on GPA in Figure 1 into its direct effect ($b^*_{y1} = .39$), plus its indirect effect ($b^*_{41}\ b^*_{y4} = .03$), that is, GRE-A acting through SPFAA and a spurious effect ($r_{y1} - b^*_{y1} - b^*_{41}\ b^*_{y4} = .01$) due to its correlation with other variables preceding it in the system. The residual path coefficients E_4 and E_y estimate the effect of all unmeasured variables not included in the model that may cause variation in the two endogenous variables SPFAA and GPA.

When the arrows go in both directions this indicates that the direction of causality cannot be determined, and thus instead of having an estimate of a causal effect such as a regression coefficient we simply have a correlation coefficient. For example, in Figure 1 it was decided that no good case could be made for inferring direction of causality between GRE-A and UGR (undergraduate rank in class), therefore the path diagram only estimates the correlation.

Inspection of Figures 1 and 2 indicates that GRE-A and UGR are depicted as determiners of both GPA and SPFAA. "Accomplishment" is depicted as only a determiner of SPFAA. Accomplishment is a composite variable reflecting

amount of participation in professional activities, number of awards received, etc. The rationale underlying this particular causal network is that scores of SPFAA, the student self-prediction of his ability to achieve a high GPA in the future, can be argued to be primarily a function of feedback concerning his past academic achievements and related activities.

Comparing Figure 1 with Figure 2 sheds additional light on how the "test choosers" differ from the "non-test choosers" with respect to patterns of interrelationship among the additional variables. For example, for "test choosers" the GRE-A has considerably higher causal and/or correlational relationships with GPA, SPFAA, and accomplishment. It would appear that tests are a good predictor for these people in many cases. Although GRE-A seems to have a generalizable validity for many activities for "test choosers," it does not relate to their undergraduate ranks in class. For the "non-test choosers," we have just the reverse profile. That is, inspection of Figure 2 indicates that GRE-A is about two-thirds as important in determining GPA and less than half as important in determining SPFAA for the "non-test choosers." Furthermore, it (GRE-A) has essentially a zero relationship with accomplishment, compared to an r of .22 for the "test choosers." Also, for the "non-test choosers," unlike the "test choosers," there is some relationship between GRE-A and UGR. Also, as one might expect, the largest determiner of SPFAA, essentially a self-perception variable, for the "non-test choosers" is UGR while for the "test choosers" it is GRE-A.

It should be noted here that while the GRE-A <u>is</u> a significant predictor for "non-test choosers," it simply becomes an even more important

predictor for the "test choosers." It also should be pointed out that the GRE-A is an achievement test in a specific area and thus knowledge of one's test score has a certain amount of built-in "face validity" for making predictions of future academic achievement in that specific area. Thus it is felt that these results may well apply only to achievement rather than to aptitude tests.

A clearer picture of the differences between the "test chooser" and the "non-test chooser" may be drawn. The "test chooser's" graduate GPA is best predicted by his GRE-A score, and his self-perception of ability to succeed in graduate school (SPFAA) is more related to achievement on the GRE-A than to his undergraduate record. He is also somewhat "brighter" in that his test scores, i.e., GRE-A, are considerably higher than those of the "non-test chooser," while both his UGR and his first semester grades in graduate school are only slightly higher than the "non-test chooser."

When the path analysis results are viewed in conjunction with the mean differences for the two populations, one could make a case for SPFAA as a measure of that slippery concept of motivation, at least for the "non-test choosers." The reasoning underlying such a hypothesis is as follows: First, it is the best single predictor of first semester graduate grades for the "non-test choosers" who may be somewhat "overachievers." That is, the "non-test choosers" as a group compared to the "test choosers" are over one-half standard deviation below the "test choosers" on the GRE-A, yet are approximately only one-quarter standard deviation below with respect to first semester grades. Coupled with this fact is that for the "non-test choosers" UGR is the best determiner of SPFAA. In fact the total nonspurious effect of UGR on GPA is substantially greater for the "non-test choosers"

than for the "test choosers" (-.10 vs. .00). Undergraduate grades have often been referred to in the literature on prediction as our best available measure of motivation.

It is possible that the further standardized tests depart from aptitude content, the greater the possibility that the test itself is a good measure of motivation. That is, the test among other things is measuring the individual's motivation as well as ability to assimilate information in his specialty (GRE-A). This may not be true for all people, however, i.e., for the "test chooser" it may assess both his ability and motivation, while for the "non-test chooser" it may measure ability, thus it remains a significant predictor for these people also, yet we need an additional measure of motivation to round out the prediction equation. The separate path analysis results tend to confirm these tentative hypotheses. That is, for the "test chooser" the GRE-A scores are related to level of motivation, while for the "non-test chooser" the relation is considerably smaller.

Additional regression analyses were done separately within sample 1 and sample 2 in an attempt to define other biographical characteristics which might differentiate the "test chooser" from the "non-test chooser." The significant characteristics which were replicated in both samples suggest that the "test chooser" prefers objective tests to essay exams, reports that he generally studies less than his classmates and describes his parents as being somewhat dissatisfied with his undergraduate grades. The "non-test chooser" is simply characterized by the reverse of this profile, indicating his academic success appears to be more related to hard work than measured aptitude. If nothing else, the above discussion

points out the complexity of the motivational construct and how any particular measure may interact with different types of individuals. In this instance, SPFAA, a possible measure of motivation, is an important predictor for "non-test choosers," but is much less important for "test choosers."

These results suggest that a serious look should be taken at the possibility that the applicant should have a say in selecting the method of assessment which he feels should be most heavily weighted in considering his application. Such an ipsative weighting system allows the candidate to put his best foot forward thus accentuating his strengths. This would allow for a truly compensatory prediction system. Thus, if such an individualized weighting system can be demonstrated to lead to little or no decrease in predictive accuracy overall, the extra computation may well be justified. It is also felt that such a participatory approach may lead to a more positive attitude toward the whole selection procedure. Operationally the system could be set up so two predictions for every candidate could be made, one using the "ipsative" weights and one using the "normative" weights. Assuming that both systems were approximately equally valid, the institution could choose to make their decision based on the method which yields the highest estimate of the candidate's ability.

The question arises, how would one determine the ipsative or personalized weights? One obvious method would be simply to have the candidate select from competing methods the one he or she feels is most applicable. The "best" weights could then be empirically derived for those people selecting that particular method. The present results suggest that these "best" weights would reflect to a certain extent the candidate's weighting.

Another approach would be to estimate within-group regressions with inequality restrictions reflecting the candidate's weighting. Obviously this approach has Baysian overtones and can be put into such a formal framework also. The comparative validity of various means of estimating the ipsative weights is a researchable question.

Conclusions

First-year graduate students were asked to indicate through their responses to a BIS which ability measure was the one best indicator of how well they would do in graduate school. The sample was then divided into two parts, those who felt tests were the best indicator of success (test choosers) and those who felt that some other means of assessment was the best for them (non-test choosers). Within-group regressions were then computed and compared using path analysis techniques. The obtained empirical least squares weighting system gave support to the possibility that graduate students could identify those predictors which would yield minimum errors of prediction for them. It was not, however, a case where tests could predict only for "test choosers." They were also a significant but comparatively less important predictor for "non-test choosers." Path analysis procedures were then used to identify differences as well as possible causes for these differences between "test choosers" and "non-test choosers." Indications of the importance of motivational measures as predictors for "non-test choosers" were suggested.

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Table 1

Overall Multiple Prediction Validity Information

	Sample 1		Sample 2		
Independent Variables	Standardized Regression Weights	Multiple R	Standardized Regression Weights	Multiple R	Cross-Validated R
GRE-A	.2476		.2146		
Chances of obtaining high GPA (SPFAA)	.2644	.384	.2946	.3957	.3935
UGR	-.0362		-.0126		

Table 2

Standardized Regression Weights and Validity Information

by Choice of Assessment Procedures

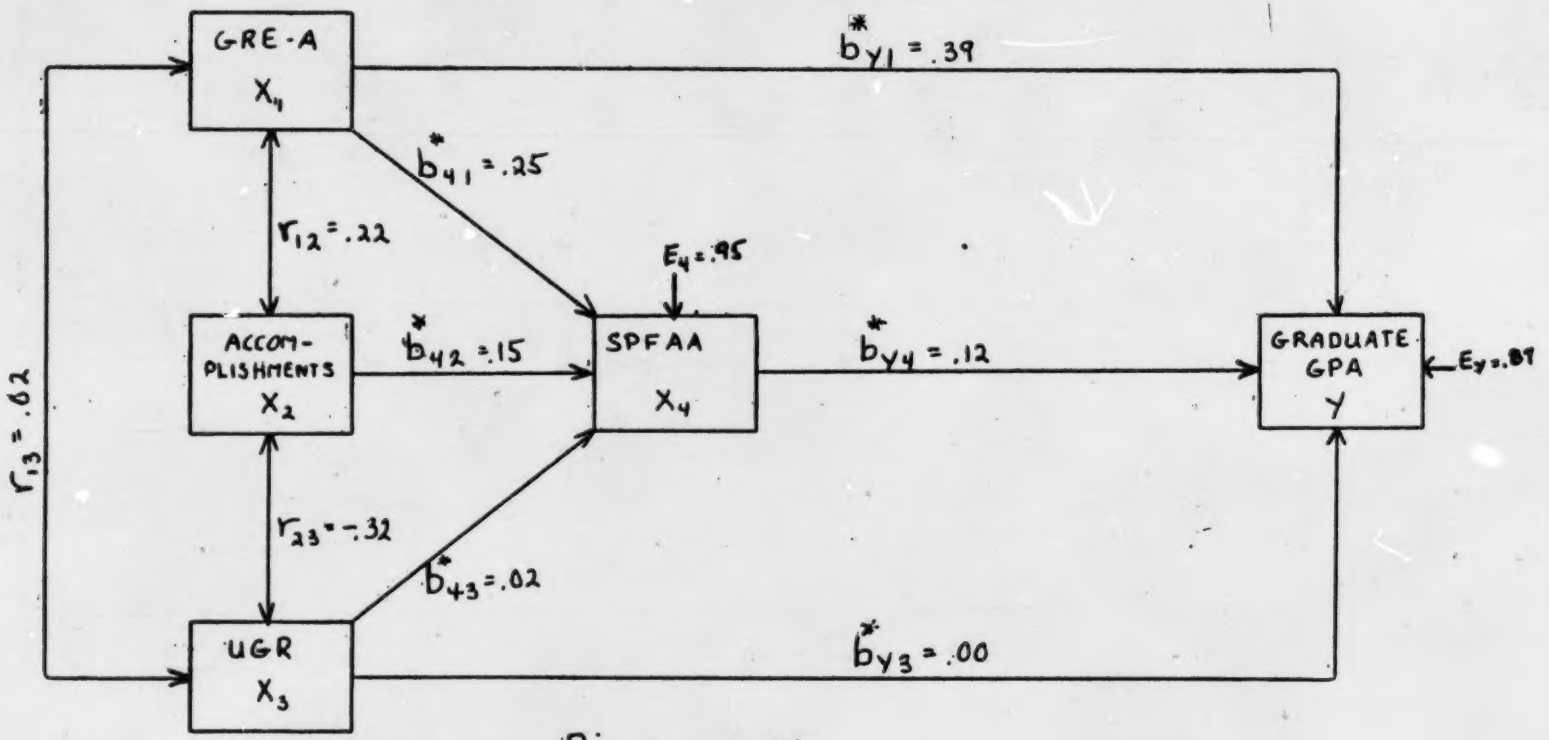
	Sample[a] 1(a) (tests best estimators)					Sample[b] 1(b) (other than tests)				
	$\bar{X}$	σ	r_{xy}	b*	R	$\bar{X}$	σ	r_{xy}	b*	R
GRE-A	675.26	66.69	.33	.27	—	624.25	96.42	.27	.24	—
SPFAA	3.00	.86	.21	.10	—	3.13	.80	.32	.29	—
					.35					.40
UGR	2.20	1.27	.12	.06	—	1.97	1.10	-.11	-.06	—
GPA (Y)	3.59	.38	—	—	—	3.55	.45	—	—	—

	Sample[c] 2(a) (tests best estimators)					Sample[d] 2(b) (other than tests)				
	$\bar{X}$	σ	r_{xy}	b*	R	$\bar{X}$	σ	r_{xy}	b*	R
GRE-A	708.23	84.79	.52	.51	--	637.67	120.60	.23	.17	—
SPFAA	3.45	.60	.16	.15	--	3.19	.81	.34	.31	--
					.54					.38
UGR	2.14	1.14	-.14	-.03	--	1.96	1.14	-.12	-.02	--
GPA (Y)	3.71	.31	—	—	—	3.57	.43	—	—	—

[a] Statistics in this sample were computed on N's from 19-34.
[b] Statistics in this sample were computed on N's from 178-468.
[c] Statistics in this sample were computed on N's from 18-40.
[d] Statistics in this sample were computed on N's from 190-468.

Figure 1

Path Analysis Model of Hypothesized Relationships Among Selected BIB Items and Predictors and Criterion for Those Selecting Tests[a] (Test Choosers)

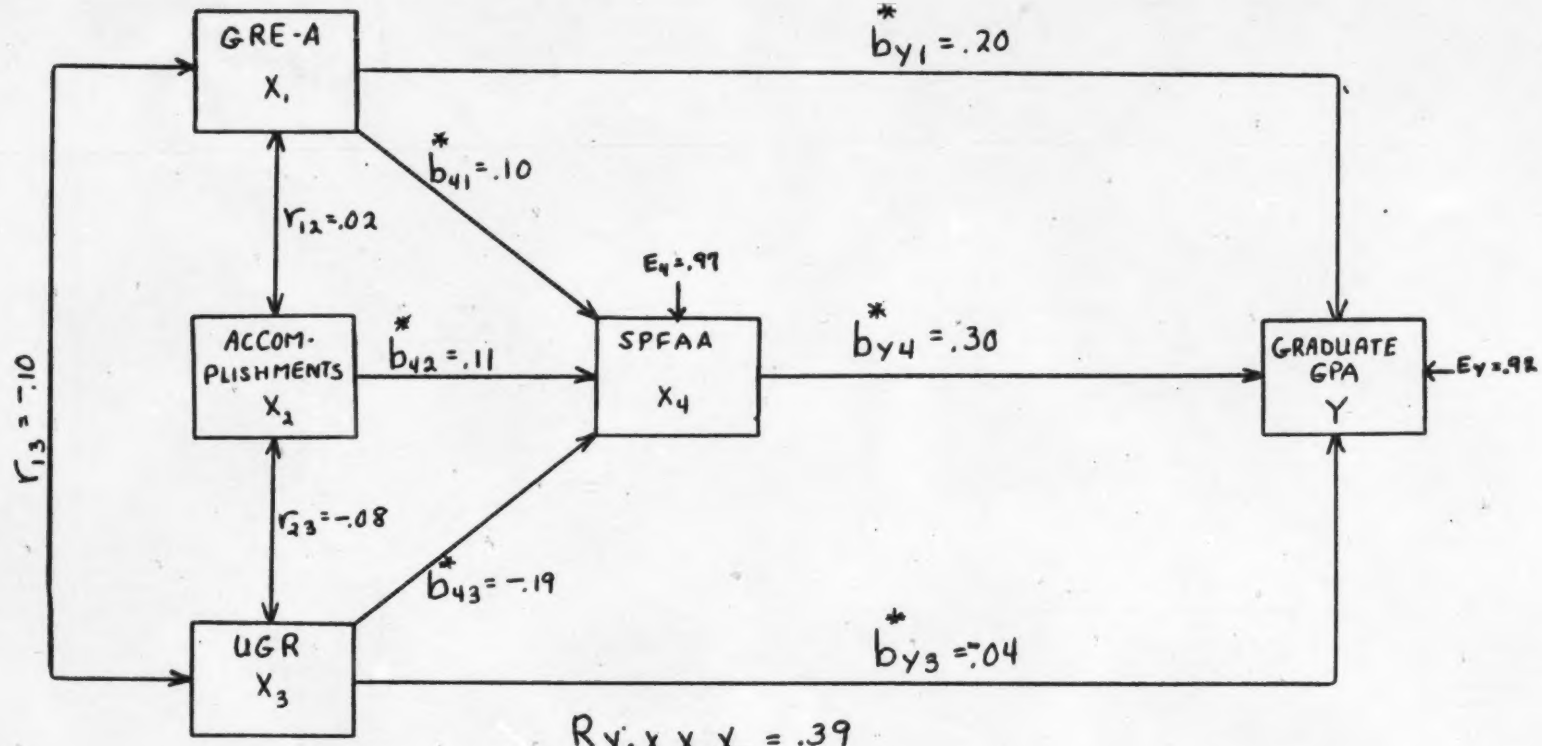


[a] Samples 1 & 2 are combined for this analysis.

Figure 2

Path Analysis Model of Hypothesized Relationships Among Selected BIB Items and Predictors and Criterion for Those Selecting Other Than Tests[a]

(Non-Test Choosers)



[a] Samples 1 & 2 are combined for this analysis.

APPENDIX

Percentage of Response for the
Experimental Biographical Questionnaire for Graduate Students

N = 2375

	%
1. What is your age?	
1. 19 years or younger	0.1
2. 20	0.5
3. 21	5.5
4. 22	32.2
5. 23	14.4
6. 24	9.2
7. 25	8.4
8. 26	6.2
9. 27 years or older	23.0
No response	0.5
2. What is your sex?	
1. Male	64.2
2. Female	35.8
No response	0.0
3. Please describe your marital status.	
1. Single, don't expect to be married soon	48.9
2. Single, expect to be married soon	7.4
3. Married, no children	25.5
4. Married, one or more children	13.9
5. Widowed, divorced, separated	3.7
No response	0.7

4. How many dependents do you support: (Count yourself as one.)

	%
1. None	22.8
2. One	51.1
3. Two	14.9
4. Three	5.1
5. Four or more	5.6
No response	0.5

5-6. Indicate the highest educational level attained by each of your parents.

	5. Father %	6. Mother %
1. 8th grade or less	13.2	9.1
2. Some high (secondary) school	7.9	7.1
3. High school graduate	17.2	30.5
4. Business or trade school	5.3	8.4
5. Some college	15.3	19.2
6. College graduate	17.1	15.7
7. Attended graduate or professional school, but did not receive a graduate or professional degree	3.9	3.3
8. Received a master's degree or its equivalent	10.1	5.3
9. Received a doctor's degree	9.3	0.7
No response	0.8	0.6

7. Describe the extent of traveling you might have done as a result of family vacations, group trips, etc.

	%
1. I have done little or no traveling	6.4
2. I have traveled primarily within my own state of residence	20.4
3. I have traveled extensively within the United States	32.2
4. Most of my travel has been outside the territorial U. S. and I have seen little of the U.S. itself	8.0
5. I have done extensive traveling both within and outside the U.S.	31.7
No response	1.2

8-9. In what section of the country did you spend most of your early life? (Check one in each column)

	8. School Grades K-8 %	9. School Grades 9-12 %
1. Northeast: Conn., Maine, Mass., N.H., N.J., N.Y., Pa., R.I., Vt.	12.2	11.4
2. South: Ala., Ark., Del., D.C., Fla., Ga., Ky., La., Md., Miss., N.C., Puerto Rico, S.C., Tenn., Va., W. Va.	8.7	7.4
3. Midwest: Ill., Ind., Mich., Ohio, Wis.	11.8	10.3
4. Plains: Colo., Iowa, Kan., Minn., Mo., Mont., Neb., N. Mexico., N.D., Okla., S.D., Texas, Wyo.	30.5	30.9
5. West: Alaska, Ariz., Calif., Hawaii, Idaho, Nev., Oreg., Utah, Wash.	27.2	31.5
6. Other	8.1	7.1
No response	1.5	1.5

10. What is your racial or ethnic background

	%
1. Puerto Rican	0.0
2. Black, Afro-American, Negro	3.1
3. Caucasian, White	85.2
4. Spanish American	0.6
5. Mexican American	2.3
6. Oriental	5.0
7. American Indian	0.3
8. Other	2.9
No response	0.5

11. What is your current status with the selective service?

1. I have been in the service	20.5
2. I have not been in the service	67.5
No response	12.0

12. Was any language other than English commonly used in your home while you were growing up?

1. No	81.1
2. Yes	18.5
No response	0.4

13-14. Which of the following categories comes closest to your parents' occupations? If either is retired, deceased, or unemployed, indicate their former or customary occupation.

	13. Father (or male guardian) %	14. Mother (or female guardian) %
1. Unskilled (maid, waiter, housewife, service station attendant, domestic, janitor) or semi-skilled worker (typist, store sales, telephone operator, factory worker)	9.0	51.4
2. Service worker (policeman, fireman, barber, beautician, cook, military non-commissioned officer)	4.5	2.8
3. Skilled worker or craftsman (carpenter, electrician, plumber, auto mechanic, foreman, seamstress, enlisted man in armed forces)	12.3	2.4
4. Semiprofessional or technician (laboratory or medical technician, draftsman, bookkeeper, insurance salesman, secretary-stenographer, computer programmer, nurse)	11.0	20.3
5. Owner, manager, partner of a small business or lower level government official, military commissioned officer	22.9	3.6
6. Profession requiring a bachelor's degree (engineer, elementary or secondary teacher, high-level or technical sales)	14.9	14.0
7. Owner, high-level executive in a large business or in a high-level government agency	9.3	0.3
8. Profession requiring an advanced degree (doctor, lawyer, professor, etc.)	14.7	1.9
No response	1.3	3.3

15. What was the approximate annual income of your family during your last two years of undergraduate college?

	%
1. Less than $4,000	8.9
2. $4,000 to $7,999	16.2
3. $8,000 to $11,999	22.1
4. $12,000 to $19,999	26.1
5. $20,000 and over	20.7
No response	5.9

16. What kind of secondary school (high school) did you attend?

1. Public	81.4
2. Private, nonreligious, nonmilitary	4.3
3. Protestant denominational	1.5
4. Catholic	11.4
5. Received an adult education or GED (high school equivalency) diploma	0.1
6. Other	0.8
No response	0.5

17-18. About how many students were there in your graduating classes? (For #18, response should be number for entire University, not for a college or department within the University.)

	17. High School %	18. University %
1. Fewer than 50	10.3	1.2
2. 50 - 199	24.9	5.7
3. 200 - 499	32.4	14.1
4. 500 - 999	26.7	14.3
5. 1,000 or more	4.5	62.5
No response	1.1	2.2

19-20. Indicate your academic rank in your graduating classes.

	19. High School %	20. College %
1. Top ten percent } (highest fifth)	62.0	37.5
2. 11 - 20 percent } (highest fifth)	18.7	24.3
3. 21 - 40 percent (next highest fifth)	9.3	17.6
4. 41 - 60 percent (middle fifth)	5.2	7.4
5. 61 - 80 percent (next lowest fifth)	1.5	1.6
6. 81 - 100 percent (bottom fifth)	0.8	0.8
No response	2.5	10.8

21. How would you describe your general reading ability in comparison to that of your college classmates?

	%
1. My reading rate is low, and my comprehension is average	7.3
2. My reading rate and comprehension are both average	25.6
3. My reading rate is high, and my comprehension is average	9.4
4. My comprehension is above average, and my reading rate is average	32.0
5. My reading rate and comprehension are both above average	24.6
No response	1.0

22. During an average week of your senior year as an undergraduate how much time did you spend on the following outside reading (i.e., not required reading)? Please circle one number in each row.

1. None or almost none
2. About 1/2 hour a week
3. About 1 - 2 hours a week
4. About 3 - 4 hours a week
5. About 5 - 6 hours a week
6. About 7 - 8 hours a week
7. About 9 or more

No response

	No response	1	2	3	4	5	6	7
	%	%	%	%	%	%	%	%
Mystery, westerns, adventure, science fiction, etc.	5.4	0.9	0.9	1.2	3.7	8.8	11.5	67.6
Science, Mathematics and Engineering	6.4	3.4	1.1	1.9	5.4	11.8	12.5	57.6
Novels, short stories, drama, poetry, literary criticism, etc.	3.5	4.1	2.0	5.4	13.0	25.1	20.3	26.6
History, economics, anthropology, current political and social issues, social criticism, etc.	4.2	4.3	2.5	4.8	11.2	24.6	21.0	27.5
Psychology	6.4	1.0	0.9	1.6	4.0	11.0	16.4	58.6
Sports and leisure time	5.6	3.6	1.8	3.1	8.3	16.6	19.0	42.0
Automotive mechanics, technological "how-to-do-it" publications	7.2	0.3	0.3	0.4	1.2	4.7	7.6	78.4
Newspapers and/or news periodicals (Time, Newsweek, etc.)	1.5	8.0	6.4	12.9	24.8	32.5	9.9	3.9

23-24. How would you rate the academic standards of your high school and undergraduate college?

	23. High School %	24. College %
1. Very high	29.4	37.9
2. Fairly high	33.7	39.2
3. About average	26.9	20.8
4. Probably below average	6.1	1.3
5. Definitely below average	3.5	0.3
No response	0.4	0.5

25. The following question concerns your grades in the most recent courses you took in certain undergraduate college subjects. For each subject circle the number corresponding to your final grade. If you took more than one subject in an area, estimate an average final grade.

1. Did not take any courses in this subject area
2. 59 or below (F)
3. 60 - 69 (D)
4. 70 - 79 (C)
5. 80 - 89 (B)
6. 90 - 100 (A)

No response

	1 %	2 %	3 %	4 %	5 %	6 %	No response %
Art	4.5	18.4	16.3	4.9	0.4	0.2	55.4
Biological Sciences	4.2	24.2	27.0	10.4	1.1	0.5	32.5
English or Literature	2.9	32.4	41.7	13.3	1.3	0.5	8.0
Foreign Language	4.2	30.2	26.5	13.0	2.6	0.9	22.7
Mathematics	4.0	27.6	27.7	14.9	3.1	0.8	21.9
Music	5.5	18.6	11.4	3.4	0.5	0.1	60.6
Physical Sciences	3.7	28.8	31.2	13.2	2.1	0.5	20.5
Social Sciences	2.7	48.0	35.4	6.6	0.5	0.2	6.7

26. In the average humanities or social science course, do you generally prefer:

	%
1. Objective examinations (e.g., true-false, multiple choice)	28.8
2. Essay examinations	68.9
No response	2.2

27. Indicate your judgment of each of four testing procedures. Please circle one number in each row.

1. Tend to overestimate my knowledge or ability
2. Fairly estimate my knowledge or ability
3. Tend to underestimate my knowledge or ability

No response

	No response %	3 %	2 %	1 %
Objective or multiple-choice examinations	2.8	30.1	46.4	20.6
Essay type examinations	1.8	14.0	77.2	7.1
Tests in which speed is a factor	1.9	50.9	33.6	13.6
Oral examinations	7.2	26.0	60.0	6.8

28. Would you say that your college grades:

	%
1. Grossly under-represented your ability	8.8
2. Slightly under-represented your ability	32.9
3. Fairly represented your ability	47.0
4. Slightly over-represented your ability	10.0
No response	1.2

29. With regard to your classroom assignments, did you regard yourself as a more consistent and harder worker than the typical student in your college classes?

	%
1. Definitely not, I worked less than my classmates	11.2
2. Generally I worked less than my classmates	25.9
3. Generally yes, I worked harder than my classmates	46.0
4. Definitely yes, I worked harder than my classmates	13.9
No response	3.1

30. How would you describe your parents' or guardians' satisfaction with your undergraduate college grades?

1. Very dissatisfied	4.0
2. Somewhat dissatisfied	5.7
3. Fairly satisfied	25.0
4. Very satisfied	62.5
No response	2.7

31. In terms of your own personal satisfaction, how much importance did you attach to getting good grades?

1. None or not much	10.1
2. A moderate amount	32.1
3. Quite a bit	34.2
4. A great deal	23.0
No response	0.5

32. **During your senior year did you ordinarily find writing papers a very difficult task, or did you have relatively little difficulty in getting your ideas down on paper?**

	%
1. **I found writing papers a very difficult task**	9.1
2. **I frequently experienced some difficulty in writing**	23.8
3. **More often than not I did not experience great difficulty**	32.5
4. **I had little or no difficulty in expressing myself in writing**	33.3
No response	1.3

33. The following statements deal with accomplishments you may have achieved in your field. Please check whether you have done any of the following during your academic experience. (Check a number for each accomplishment.)

	No %	Yes %	No Response %
1. Attended one or more meetings of a scholarly or professional society	42.4	55.8	1.9
2. On my own (not a course assignment) read scholarly or professional journals and/or books	19.2	79.9	0.8
3. Was author (or co-author) of a paper or address given at a meeting of a professional society, or published (or in press) in a scholarly or professional journal in my field	86.0	12.0	2.1
4. Was member of a student honorary group in my field	58.4	39.4	2.2
5. Won a prize, award, or other special recognition for work in my field	68.6	29.0	2.4
6. Held a paid job (half-time or more) on a continuing basis in my field	54.6	43.8	1.6
7. Have been responsible on a continuing basis for supervising the work of others in my field	76.5	21.1	2.5
8. On my own (not a course assignment) carried out a research project	69.3	29.0	1.6

34. Did your college require you to write a senior thesis or take comprehensive examinations?

	%
1. No	76.4
2. Yes	22.7
No response	0.9

35. The following phrases describe selected methods of instruction. Please circle the number in each row which designates your preference.

1. It is usually not preferable
2. You neither like nor dislike it
3. It is very preferable

No response

	1 %	2 %	3 %	No response %
Lecture	1.3	33.7	48.3	16.6
Teacher-centered seminar	1.4	48.0	37.9	12.7
Student-centered discussion or seminar	1.0	42.4	33.9	22.7
Laboratory or project work	1.6	48.9	37.1	12.4
Field work	3.2	53.4	34.4	9.1
Independent research	1.8	61.1	29.7	7.5
Written work (term papers, etc.)	1.3	31.2	42.0	25.6
Other	61.6	7.2	26.5	4.7

36. On an average, how many hours per week did you spend in either part-time or full-time work during your senior year of college (do not consider vacations)?

	%
1. None	31.1
2. Fewer than 6 (hours)	10.8
3. 6 to 10	13.9
4. 11 to 15	11.9
5. 16 to 20	15.5
6. 21 to 25	6.9
7. 26 to 30	3.9
8. More than 30	5.4
No response	0.6

37-39. How strongly did your parents (or guardians) and friends encourage you to attend graduate or professional school?

	37. Father %	38. Mother %	39. Friends %
1. Strongly discouraged me from attending	1.1	0.9	0.6
2. Discouraged me from attending	3.1	2.7	2.2
3. Neither encouraged nor discouraged me	41.6	42.6	36.8
4. Encouraged me to attend	21.6	25.9	26.1
5. Strongly encouraged me to attend	19.3	21.1	25.0
6. Doesn't apply	11.2	5.7	7.8
No response	2.1	1.3	1.5

40-41. How much education do you plan to complete?

	40. Highest Degree now held	41. Highest Degree planned
	%	%
1. Bachelor's Degree (A.B., B.A., B.S., etc.)	84.7	0.6
2. Master's Degree (M.A., M.S., M.A.T., etc.)	11.6	40.5
3. Ph.D. or Ed.D	0.3	41.9
4. M.D., D.D.S., or D.V.M.	0.4	5.2
5. LL.B. or J.D.	0.1	5.3
6. B.D., M.Div., Th.D., D.Min.	0.3	0.2
7. Other	0.8	2.9
No response	1.8	3.5

42. To how many graduate schools did you actually apply for admission?

1. None	0.5
2. One	39.2
3. Two	16.2
4. Three	13.6
5. Four	10.3
6. Five	7.8
7. Six or more	11.9
No response	0.6

43. In considering the financial support of your graduate or professional school career, how much importance do you attach to each of the following sources of funds?

1. Not a source of funds
2. A minor source of funds
3. A major source of funds

No response

	1	2	3	No response
	%	%	%	%
Parental or family aid	1.5	18.5	22.4	57.6
Spouse's employment	5.6	21.3	9.2	63.8
Scholarship, fellowship or other award	2.5	36.1	12.6	48.8
Loan or personal savings	1.9	30.7	34.9	32.6
Research assistantship or equivalent	3.5	17.1	7.6	71.7
Teaching assistantship or equivalent	3.6	25.2	7.1	64.2
Other university employment	3.7	8.5	12.4	75.4
Employment outside the university, etc.	3.2	21.9	22.4	52.4
GI or VA benefits	98.4	1.0	0.4	0.3

44. Indicate the importance to you personally of the following persons or experiences in your decision to go to graduate school? Please circle one number in each row.

1. Not relevant
2. Minor influence
3. Major influence

No response

	1	2	3	No response
College counselor	1.2	4.8	8.3	85.8
One or more of my professors	1.1	34.4	27.5	37.1
Some other person(s) I admire	1.0	32.1	29.3	37.6
Professional counseling or placement service	1.3	1.6	4.4	92.7
Some past work experience	0.9	34.2	21.9	42.9
Difficulty in finding suitable employment	1.2	19.6	17.8	61.4

45. How useful to you were the following sources of assistance as you selected a graduate field of study? Please circle one number in each row.

1. Source not used
2. Source used, but of no value
3. Source was somewhat helpful
4. Source was very helpful

No response

	No response %	1 %	2 %	3 %	4 %
Vocational guidance tests	0.8	1.0	4.8	7.3	86.0
Individual vocational counseling	0.9	1.5	4.7	5.5	87.5
Individual academic counseling	1.2	4.4	14.0	6.9	73.5
Occupational readings	1.3	9.1	25.1	9.3	55.3
Advice from family	0.9	6.2	21.6	13.2	58.1
Advice from potential employers	0.9	5.8	13.3	5.4	74.5
Part time and summer jobs	1.0	13.1	17.9	5.9	62.1
Advice from faculty member	1.0	23.2	27.8	6.6	41.3
College placement scores	1.2	3.0	12.6	14.1	69.0
Experience with the military	1.3	4.2	3.5	2.7	88.4

46. The following question concerns the importance of different factors in determining your choice of graduate school. For each factor, circle the correct number.

1. It is not important at all
2. It is slightly important
3. It is quite important
4. It is extremely important

No response

	No response %	1 %	2 %	3 %	4 %
Geographic location	1.0	34.9	29.9	23.7	10.5
Overall academic reputation	0.9	38.3	44.8	11.8	4.2
Chance to work under a particular faculty member	1.1	12.3	14.1	21.9	50.8
Academic reputation in your major field of choice	1.1	41.6	35.7	14.1	7.5
Admission requirements	1.0	9.8	21.9	28.1	39.2
Special course offerings	1.1	17.8	23.5	22.4	35.3
Religious affiliation	1.0	0.3	0.5	2.2	96.0
Availability of financial aid	1.3	28.8	16.5	13.6	39.7
Cost of tuition	1.0	29.7	26.3	17.6	25.5
Coeducational enrollment	1.1	9.0	11.2	15.3	63.4
Living facilities	1.1	5.0	10.4	18.8	64.8
Grading system	1.1	1.6	5.4	15.3	76.6
Size of student body	1.2	2.1	9.0	22.1	65.6
Physical plant	1.7	3.5	12.4	21.8	60.6
Graduate student-faculty ratio	1.1	8.0	23.6	24.4	42.8
Advice of a former teacher at another school	1.3	10.3	15.3	16.3	56.8
Curriculum flexibility	1.1	15.7	29.0	21.4	32.8
Politically aware student body	1.3	3.1	11.5	23.2	61.0
"Liberal" policies with respect to restrictions on non-academically related student behavior	1.4	7.5	13.4	20.1	57.5
Thesis requirement or lack thereof (i.e., at the Master's level)	1.9	5.1	11.0	18.9	63.1
Ph.D. language requirements	2.4	3.3	5.4	11.5	77.3
Cultural facilities available	1.2	11.8	25.3	26.7	35.0
Physical facilities available	1.2	7.6	21.5	28.6	41.1
Social prestige of the institution	1.1	7.2	19.9	29.6	42.2

47. Listed below are various reasons for selecting a particular major field of study. Please show their relative influence by circling one number in each row.

1. Not relevant
2. A minor influence
3. A relatively important influence
4. A major influence

No response

	No response %	1 %	2 %	3 %	4 %
I seem to have a natural aptitude for this area (achievement comes easily for me in this area)	1.3	41.2	34.4	15.6	7.6
The subject area is intrinsically interesting to me	0.7	70.7	22.6	4.7	1.3
Rising need or demand for people with training in this area	1.1	22.3	27.8	23.5	25.4
Altruistic reasons (e.g., work in this area may be particularly beneficial to society)	0.9	20.9	27.7	25.8	24.7
Liberal graduate admissions policies with respect to pre-requisite undergraduate work	0.9	3.6	6.9	15.2	73.3
Graduate work in this area isn't as demanding as in other areas (e.g., average length of time to Ph.D. is relatively short)	1.0	1.3	3.0	11.0	83.7
Advice from counselors	0.8	2.8	6.6	13.7	76.0

48-49. Below is a list of major field groupings. Please indicate the group which contains your major, and the group which you find to be least appealing.

1. Least appealing field
2. Major field
3. Major field is least appealing

No response

	1 %	2 %	3 %	No response %
Humanities (Classics, Drama, English, Fine Arts, Modern Languages, Philosophy, Religion, Speech)	67.7	0.0	17.1	15.2
Science (Archeology, Astronomy, Biology, Botany, Chemistry, Geology, Mathematics, Physics, Medicine)	67.1	0.1	24.2	8.7
Engineering (Architecture, Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, Mechanical Engineering, Computer Science)	56.8	0.0	10.3	32.9
Social Science (American Civilization, Anthropology, Economics, Government, History, Political Science, Psychology, Sociology)	68.8	0.1	26.5	4.6
Business and Commerce (Accounting, Advertising, Business, Commerce, Finance, Industrial Management, Industrial Relations, Hotel Administration, Real Estate)	51.9	0.1	10.9	37.1
Other (e.g., Agriculture, Education, Home Economics, Journalism, Military Science, Pharmacy, Social Work)	66.3	0.2	20.1	13.4

50. Indicate which of the following ability measures you feel would be the one best indicator of how well you will do in graduate school.

	%
1. My GRE aptitude scores	4.4
2. My GRE advanced tests	1.3
3. My college grade point average	15.5
4. Some measure of my motivation to achieve	43.2
5. My letters of reference	12.3
6. My grades in my major field	19.4
No response	3.8

51. What is your best guess as to the chances that you will: (Circle one number in each row.)

	No Response	Very Good Chance	Some Chance	Very Little Chance	No Chance
	%	%	%	%	%
Obtain an A- (or better) overall grade point average	1.8	31.8	46.5	14.6	5.3
Change major field	0.8	4.4	12.8	33.1	48.8
Change career choice	1.8	6.4	25.8	34.4	31.6
Fail one or more courses (grade of C or under)	1.0	2.1	14.1	47.1	35.7
Transfer to another university before completing your degree	0.9	5.1	16.1	35.7	42.3
Participate in student protests or demonstrations	1.5	7.1	23.2	33.1	35.1
Drop out of graduate school temporarily because of health problems	1.2	0.6	4.2	44.1	49.9
Drop out permanently (exclude transferring)	0.9	1.8	9.9	39.4	48.0
Drop out of graduate school because of the military draft	1.6	0.8	1.6	8.4	87.6
Drop out because of financial problems	0.8	4.3	18.1	41.8	35.1
Drop out because of academic problems	0.9	0.5	6.7	46.5	45.3
Drop out because of lack of motivation	0.9	3.3	14.7	32.6	48.5

52. Circle the number in each row which best describes your attitude towards problem areas which you may encounter in graduate school.

1. Absolutely no problem
2. May be some problem but I will be able to cope with it
3. Will be a major problem

No response

	No response %	3 %	2 %	1 %
Finances	0.7	23.0	59.2	17.1
Handling the content of my courses	0.9	3.9	68.2	27.0
Relations with one or more members of the opposite sex	1.3	6.5	33.7	58.6
Deciding on a major field or specialty within a field	0.7	9.6	39.8	49.9
Some aspect of parent and/or family relations	0.8	3.4	26.9	68.9
Study habits	0.7	8.7	50.9	39.7
Ability to organize and present my ideas in written form	0.8	7.7	49.0	42.5
Budgeting of time between competing activities (e.g., social, academic, family responsibilities, part-time work)	0.8	20.6	57.9	20.7
My role in relationship to student activist groups; e.g., whether or not to support or participate in student groups such as SDS, Weathermen, etc.	1.3	1.0	11.1	86.7
Trying to "find" myself in the sense of personal meaning and identity	0.8	11.6	34.5	53.1
Getting along with my fellow graduate students	0.5	1.3	21.7	76.4
Finding a faculty or research advisor with whom I will be able to work	1.2	7.1	40.3	51.4
Deciding upon or being able to develop my own research ideas	1.4	14.2	54.0	30.4
Fulfilling the doctoral language requirements	9.4	8.1	18.9	63.5
Being able to complete the extensive reading required	1.5	8.5	55.7	34.4
Completing the Doctoral thesis requirement	12.0	12.4	32.2	43.4
Ability to perform in a competitive academic atmosphere	1.0	6.2	49.0	43.8
Being able to maintain a high level of motivation within a relatively unstructured environment	1.7	11.6	43.0	43.7

53. The following question refers to various opportunities which are generally open to Ph.D.'s. Assuming you had to make a decision concerning your post-graduate work, indicate the relative importance of the following opportunities in your selection of a post-graduate position. Please circle one number in each row.

1. Of little or no importance
2. Of some importance
3. Very important

No response

	%	%	%	%
Opportunities to do research	11.6	33.1	35.4	19.9
Opportunities to teach	11.5	43.5	30.2	14.9
Opportunity to work in administration	12.0	11.7	25.8	50.6
Opportunity to do post-doctoral work	12.5	16.0	38.7	32.9

54. In choosing a career, how important would you consider each of the following opportunities to be?

1. Of little or no importance
2. Of some importance
3. Very important

No response

	%	%	%	%
Opportunity to work with ideas and theories	0.8	50.1	41.9	7.2
Opportunity to work with people	0.8	70.4	25.1	3.8
Opportunity to work with objects and things	1.2	15.8	41.0	42.0
Opportunity to be a leader	1.0	28.8	48.3	21.9

55. People find different factors important in their choice of a job. Please circle one number beside <u>each</u> factor, indicating its importance to you.

1. Of little importance
2. Of some importance
3. Very important

No response

	No response %	1 %	2 %	3 %
Job security, advancement	0.8	30.1	56.8	12.3
Interesting work	0.5	96.1	3.4	0.0
Freedom to make decisions	0.7	80.8	17.6	0.9
Opportunity to influence social values, and/or to make contributions to science	0.8	51.6	36.8	10.7
Recognition, becoming an authority, status	0.8	18.1	50.0	31.2

Means and Standard Deviations for Selected Questions from the Experimental Biographical Questionnaire for Graduate Students

Question	$\bar{X}$	σ	Question	$\bar{X}$	σ	Question	$\bar{X}$	σ
1.	5.89	2.15	25. a	2.68	2.21	36.	3.31	2.16
4.	2.18	1.03	b	3.59	2.17	37.	3.82	1.26
5.	4.72	2.53	c	4.69	1.56	38.	3.77	1.10
6.	4.11	1.91	d	3.98	2.06	39.	3.92	1.14
13.	4.86	2.15	e	3.96	2.01	42.	3.63	1.79
14.	2.65	2.10	f	2.44	2.18	43. a	1.58	0.80
15.	3.16	1.45	g	4.10	1.98	b	1.46	0.89
17.	2.87	1.09	h	5.00	1.52	c	1.82	0.96
18.	4.25	1.18	27. a	2.04	0.79	d	1.94	0.84
19.	1.60	1.06	b	2.03	0.53	e	1.38	0.81
20.	1.81	1.23	c	2.33	0.78	f	1.54	0.91
21.	3.38	1.34	d	2.05	0.78	g	1.26	0.66
22. a	1.49	1.16	28.	2.56	0.83	h	1.63	0.86
b	1.79	1.52	29.	2.56	0.96	i	0.04	0.33
c	2.62	1.62	30.	3.41	0.96	44. a	1.17	0.51
d	2.57	1.65	31.	2.69	0.95	b	1.95	0.87
e	1.61	1.22	32.	2.87	1.02	c	1.93	0.86
f	2.14	1.61	35. a	2.14	0.73	d	1.06	0.34
g	1.18	0.80	b	2.33	0.75	e	1.89	0.89
h	3.80	1.54	c	2.18	0.81	f	1.56	0.81
23.	2.19	1.05	d	2.33	0.75			
24.	1.85	0.82	e	2.38	0.78			
			f	2.50	0.71			
			g	2.03	0.79			
			h	0.79	1.06			

Question	$\bar{X}$	σ	Question	$\bar{X}$	σ	Question	$\bar{X}$	σ
45. a	1.19	0.57	46. a	2.87	1.04	47. a	3.07	0.99
b	1.18	0.59	b	3.15	0.85	b	3.61	0.71
c	1.47	0.91	c	1.86	1.08	c	2.45	1.13
d	1.85	1.09	d	3.09	0.97	d	2.43	1.10
e	1.74	1.01	e	2.00	1.02	e	1.39	0.78
f	1.49	0.94	f	2.22	1.14	f	1.20	0.56
g	1.80	1.15	g	1.03	0.27	g	1.35	0.74
h	2.31	1.25	h	2.32	1.29	51. a	3.01	0.92
i	1.47	0.84	i	2.58	1.19	b	1.71	0.86
j	1.21	0.72	j	1.64	1.01	c	2.04	0.95
			k	1.54	0.88	d	1.81	0.76
			l	1.30	0.66	e	1.82	0.89
			m	1.45	0.76	f	1.99	0.96
			n	1.55	0.86	g	1.53	0.63
			o	1.95	1.01	h	1.64	0.75
			p	1.77	1.06	i	1.12	0.47
			q	2.26	1.11	j	1.90	0.85
			r	1.54	0.83	k	1.60	0.65
			s	1.68	0.98	l	1.71	0.85
			t	1.54	0.90			
			u	1.30	0.75			
			v	2.11	1.05			
			w	1.93	0.99			
			x	1.90	0.97			

Question		$\bar{X}$	σ	Question		$\bar{X}$	σ
52.	a	2.04	0.65	54.	a	2.41	0.66
	b	1.75	0.53		b	2.65	0.59
	c	1.45	0.63		c	1.71	0.74
	d	1.58	0.67		d	2.05	0.74
	e	1.33	0.55	55.	a	2.16	0.65
	f	1.68	0.64		b	2.95	0.27
	g	1.64	0.63		c	2.78	0.48
	h	1.98	0.67		d	2.39	0.71
	i	1.12	0.39		e	1.85	0.71
	j	1.57	0.70	56*	a	2.48	0.89
	k	1.24	0.47		b	1.99	0.86
	l	1.53	0.64		c	2.12	0.88
	m	1.81	0.68		d	1.87	0.87
	n	1.26	0.74		e	2.07	0.89
	o	1.71	0.64		f	1.88	0.93
	p	1.45	0.86		g	1.96	0.80
	q	1.60	0.62		h	2.52	0.87
	r	1.64	0.70		i	2.66	0.83
53.	a	1.90	0.99		j	2.60	0.92
	b	2.06	1.02		k	2.74	0.92
	c	1.37	0.84		l	3.41	0.68
	d	1.58	0.90		m	2.36	0.38

* Question #56 is based on the Rotter Locus of Control Scale. See the following page for this question.

Fifty-six a through l show the individual item means for the 12 items that comprise the scale. Fifty-six m is the mean across the sample for the total score.

56. Mark one number in <u>each</u> <u>row</u> according to how you feel about the statement:

1. Strongly disagree
2. Disagree somewhat
3. Agree somewhat
4. Strongly agree

Chance and luck are not very important in my life	4	3	2	1
These days a person doesn't really know on whom he can count	4	3	2	1
Getting a good job depends more on the length of your hair than on your ability	4	3	2	1
Nowadays a person has to live pretty much for today and let tomorrow take care of itself	4	3	2	1
Many times I feel that I have little influence over the things that happen to me	4	3	2	1
It's hardly fair to bring children into the world the way things are	4	3	2	1
In spite of what some people say, the condition of the black man is getting worse	4	3	2	1
There is little use appealing to the authorities because often they aren't really aware of the problems of the average black man	4	3	2	1
Success is a matter of hard work; luck has little to do with it	4	3	2	1
Students from disadvantaged social backgrounds should receive preferential treatment in college admissions policies	4	3	2	1
The "people" have little influence within the present political system	4	3	2	1
Special interest groups having large financial backing have the greatest inpact on governmental policy	4	3	2	1